

## **BIOREMEDIATION: THE HOPE AND THE HYPE**

Dr. Terry C. Hazen, Head, Center for Environmental Biotechnology,  
Lawrence Berkeley National Laboratory, Berkeley, CA 94720

Bioremediation has proven to be one of the most cost effective and environmentally sound remediation technologies available at sites where it will work. Though the petroleum industry has been using bioremediation to handle oil sludges (petroleum land farming) for more than 50 years, and a patent was issued for in situ bioremediation of gasoline spills in 1974, this technology is perceived as being "new". Indeed, the first patent on life, a precedence setting court case, was an oil degrading bacteria patented by GE. A plethora of new strategies have shown that chlorinated solvents, PAHs, PCBs, UXO, metals, and radionuclides can be bioremediated, biotransformed, or bioimmobilized. These techniques include passive and active aeration, injection of various electron donors and acceptors, slow oxygen releasing compounds, chelating agents, surfactants and coupling with intrinsic processes (natural attenuation). In fact, a number of companies are importing contaminant biodegraders from Russia and other countries. A number of issues are emerging that have implications for use of bioremediation to environmental cleanup, eg. release of non-indigenous species, release of genetically modified organisms, horizontal and vertical gene transfer, etc.

Supported by Department of Energy under Contract No. DE-AC03-76SF00098.